

C-O-N-F-I-D-E-N-T-I-A-L

CIA/RR GB 64-45
November 1964

CLIMATIC AND SOIL DATA ON SARATOV

(51°34'N-46°02'E)

I. Climate

Saratov has a dry continental climate somewhat similar to that of northern South Dakota. It is characterized by cold winters, hot summers, low precipitation, and light snow cover.

Surface air temperatures have wide annual and daily variations. The average monthly temperatures (see Table 1) range from 10.4°F in the coldest month (January) to 70.7°F in the warmest month (July), and temperature extremes of -36.4°F and 104.0°F have been recorded. From early November to late March the average daily temperature is below freezing, and from late April to late September it is 50°F or above.

Dry, hot winds, called sukhovey, are common in early summer. Sukhovey are generally easterly, southeasterly, or southerly and are characterized by high temperatures, very low relative humidity (less than 30 percent), wind speeds averaging more than 12 miles per hour, and minimum cloudiness. On the average these winds blow on 35 days of the April-October period.

The annual precipitation (see Table 2) averages 15.52 inches, almost 65 percent of which occurs in the warm period (April through October). The maximum monthly amount (average, 1.89 inches) normally is received in June and the minimum (average, 0.87 inches) in April. Recorded total annual precipitation has ranged between extremes of 7.05 inches and 27.56 inches, and the greatest amount recorded for a 24-hour period is 2.56 inches during a summer rainstorm. The predominant forms of precipitation are showers in summer and light snow in winter. From June through October the average number of days with precipitation ranges from 6 to 9 a month. The ground is generally dry throughout the summer. Any precipitation that falls is rapidly evaporated by the high temperature and dry air. In winter, precipitation is more frequent, but the daily amounts are very small. Snowfalls begin in early November and occur as late as May. The snow cover begins to form in November, and the depth is usually greatest in February or March, when it averages about 18 inches (long-term statistical average). The depth of snow is very irregular -- drifts form in protected locations, while areas exposed to the wind are likely to be bare. The snow usually disappears in early April, leaving muddy conditions which persist for several weeks.

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| GROUP I Excluded from automatic downgrading and declassification |
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Table 1

Temperature a/
(in degrees Fahrenheit)

| | <u>Average</u> | <u>Average Difference Between Daily Extremes</u> | <u>Maximum Difference Between Daily Extremes</u> |
|-----------|----------------|--|--|
| January | 10.4 | 13.1 | 24.3 |
| February | 11.5 | 15.7 | 28.3 |
| March | 21.7 | 16.2 | 28.6 |
| April | 41.5 | 23.2 | 33.7 |
| May | 58.5 | 24.1 | 32.9 |
| June | 66.0 | 25.7 | 35.8 |
| July | 70.7 | 24.1 | 33.8 |
| August | 67.1 | 25.6 | 34.9 |
| September | 55.8 | 25.7 | 35.5 |
| October | 41.9 | 22.9 | 32.8 |
| November | 27.7 | 16.9 | 27.2 |
| December | 15.8 | 13.0 | 28.1 |
| Annual | 40.6 | | |

Absolute minimum: -36.4

Absolute maximum: 104.0

Average daily temperature exceeds:

41 -- 12 April to 17 October

50 -- 29 April to 28 September

59 -- 19 May to 8 September

Period with mean daily temperatures usually 32

or lower: 9 November to 31 March

Normal frost-free period: 28 April to 7 October

a. Length of record unknown

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Table 2

Precipitation

| | Average Precipitation (in inches) | Average Number of Days With Snowfall |
|--------------------------------|--------------------------------------|---|
| January | 0.94 | 11 |
| February | 1.02 | 10 |
| March | 0.91 | 8 |
| April | 0.87 | 7 |
| May | 1.38 | 2 |
| June | 1.89 | 0 |
| July | 1.73 | 0 |
| August | 1.42 | 0 |
| September | 1.46 | 0 |
| October | 1.30 | 0 |
| November | 1.46 | 2 |
| December | 1.14 | 7 |
| Annual | 15.52 | 47 |
| Length of record (in years) | 37 | 33 |

Average number of days with snow cover: 134
 Average maximum depth of snow cover (based on
 10-day period of greatest depth): 18.4 inches

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II. Soils

The urban area of Saratov is located on gradually sloping terrain that rises as much as 500 feet above the Volga River. The airframe plant is located at the southwestern edge of Saratov about a mile from the river on slightly hilly land roughly 125 feet above the river.

The upper layer of sediments in the Saratov area generally consists of silt, silty sand, and silty clay to a depth of 20 feet. This upper layer is successively underlain by alternating beds of limestone, sandstone, conglomerate, and shale with a total thickness of more than 500 feet and then by argillaceous sandstone with an average thickness of 150 feet.

For installations having foundations less than 10 feet deep, conditions below the level of frost penetration (absolute maximum of 6 feet) vary from good to fair, depending on the degree of compaction for the characteristic silty deposits in the vicinity of the airframe plant. For installations requiring deeper excavations, conditions range from fair to poor, and the underlying sediments would present complex stabilization problems. Drainage problems affecting construction are seasonal, as the water table varies from about 20 feet below the surface in spring (April and May) to about 100 feet in summer and fall.

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